WRITTEN HAZARD COMMUNICATIONS PROGRAM

(per OAR 437-155)

Columbia Forge & Machine Works, Inc.
Portland, Oregon

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I. INTRODUCTION

A. CORPORATE POLICY

It is the intent and commitment of Columbia Forge & Machine Works, Inc. to comply with the spirit and letter of the Oregon Occupational Health and Safety Code, OAR Chapter 437, Division 155, Hazard Communication. The policies and procedures outlined in this manual are to be applied across all departments and locations, where applicable and relevant.

B. PROGRAM PURPOSE

The Written program will be available in the main office (on top of drawing cabinet by shop entrance) for review by any interested employee. Its purpose is to ensure that:

1. All Columbia Forge & Machine Works' locations and sites are in compliance with the Oregon Hazard Communication and its mandates.

2. All employees who are exposed or potentially exposed to hazardous* chemicals and substances are informed, trained and made aware of the law, their potential exposures and the measures and means available to them for their protection.

It is the intent of Columbia Forge & Machine Works, Inc., to incorporate and utilize all previously existing safety and health policies, procedures and rules within this program. Unless specifically conflicting with the intent and procedures of this manual, all such policies, procedures and rules remain in full force and effect.

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*A hazardous chemical is one which is a physical hazard or a health hazard as defined under the Oregon Hazard Communication (OAR 437-155 Appendix A p.18)

C. GENERAL

The Oregon Hazard Communication (OAR 437-155) establishes a comprehensive program of chemical information dissemination flowing from the manufacturer, supplier, and importer to the using employer and ultimately to the using employee. The communication is intended to cover both chemical hazards as well as physical hazards found within the workplace. All employees who are exposed to the chemical and physical hazards noted above, or who are potentially exposed to such hazards, are covered under the communication and the policies and procedures of this company.

I. INTRODUCTION (con't.)

C. GENERAL (con't.)

This company has established a comprehensive program of chemical information in order to provide necessary information to our employees for their protection and well being. This program requires the cooperation and understanding of all employees for its continued success. The program is not meant to be a one time effort on both our parts, but will continue to be effective throughout each employee's career with this company. Accordingly, the continued cooperation and understanding of all parties is required.

The information about hazardous chemicals and substances is provided to all exposed and potentially exposed employees through a variety of measures. Material Safety Data Sheets (MSDS's), container labels, placards and signs, training and education and this company's Written Hazard Communication Program are necessary for the transmission of chemical information. They are all available (to the extent they are relevant) to employees while they work for this company. All of these information sources will be explained in further detail below and within the training and education portion of this program. Questions or concerns should be brought to the attention of the immediate supervisor for resolution.

This Written Hazard Communication Program is an administrative outline of how the provisions of the Oregon Hazard Communication will be implemented and carried out in this company. It also contains specific provisions regarding the incoming MSDS program, the labeling program, nonroutine task hazard warning and training program and the methods which will be used to inform outside contractors and their employees of hazardous chemicals they may be exposed to while they are in our facility. This program will also detail what information is available to employees, where such information is located, the system of chemical lists accessible by employees, the ways which will be used to inform employees of hazards and the way in which the whole process will be kept up to date.

II. CONTAINER LABELING

The Production Manager will verify that all containers received for use will:

- Be clearly labeled as to the contents
- Have an appropriate hazard warning
- List the name and address of the manufacturer

It is the policy of Columbia Forge & Machine Works, Inc.,that no container will be released for use until the above data is verified.

II. CONTAINER LABELING (con't.)

The Production Manager will ensure that all secondary containers are labeled with either an extra copy of the original manufacturer's label or with the "central stores" generic labels which have a block for identity and blocks for the hazard warning. For help with labeling, please see our safety/health officer.

III. MATERIAL SAFETY DATA SHEETS (MSDS)

Copies of MSDSs for all hazardous chemicals to which employees of this company may be exposed will be kept in the lunch room next to the production manager's office and in the main office on top of drawing cabinet by shop entrance. If MSDSs are not available, please immediately contact the Production Manager.

The purchasing and materials management functions will contribute to the overall effectiveness of the "Hazard Communication" program by insuring that all materials and chemicals purchased from this point forward will be subject to a chemical MSDS updating system. In effect, all products coming into the facility will not be used within the facility without the receipt of a valid, effective and reasonably updated MSDS for the product. Alternatively, documentation from the manufacturer or supplier that the material in question is not hazardous pursuant to the definitions set forth in the "Hazard Communicatio Standard will be equal to the receipt of such MSDS.

In addition, it is the policy of Columbia Forge & Machine Works, Inc., to send and to continuously update our customers with MSDSs on the products they purchase. Since the chemical composition and thus the hazard of these products is not affected by our manufacturing processes, the source of these MSDSs will be Columbia Forge & Machine Works' vendors.

IV. EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each new employee of Columbia Forge & Machine Works, Inc., will attend a health and safety orientation and will receive information and training on the following:

- An overview of the requirements contained in the Hazard Communication Rules, Division 155
- Chemicals present in their workplace operations
- Location and availability of our written hazard program
- Physical and health effects of the hazardous chemicals
- Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area

IV. EMPLOYEE TRAINING AND INFORMATION

- How to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment

- Steps the company has taken to lessen or prevent exposure to these chemicals

- Safety emergency procedures to follow if they are exposed to these chemicals

- How to read labels and review MSDSs to obtain appropriate hazard information

After attending the training class, each employee will sign a form to verify that they attended the training, received our written materials, and understood this company's policies on Hazard Communication.

Prior to a new hazardous chemical being introduced into any section of this company, each employee of that section will be given information as outlined above. The Production Manager is responsible for ensuring that MSDSs on the new chemical(s) are available.

V. LIST OF HAZARDOUS CHEMICALS

The following is a list of all Hazardous Chemicals used by employees of Columbia Forge & Machine Works, Inc. Further information on each noted chemical can be obtained by reviewing Material Data Safety Sheets located in the lunch room next to the production manager's office and in the main office on top of drawing cabinet by shop entrance:

HAZARDOUS CHEMICALS	LOCATION
A. Metals	
303 Stainless Steel	All steels are located in storage yard and in the warehouse.
304 Stainless Steel	
316 Stainless Steel	
PH-17-4 Stainless Steel	
410 Stainless Steel	
410S Stainless Steel	
4130 Alloy Steel	
4140 Alloy Steel	
4340 Alloy Steel	
4620 Alloy Steel	
5160 Alloy Steel	
8620 Alloy Steel	
A-36 Carbon Steel	
1015 Carbon Steel	
1018 Carbon Steel	
1020 Carbon Steel	
1029 Carbon Steel	

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
A. Metals (con't.)	
1030 Carbon Steel	All steels are located in storage yard and in the warehouse.
1040 Carbon Steel	
1045 Carbon Steel	
1046 Carbon Steel	
1050 Carbon Steel	
1060 Carbon Steel	
5086 H116 Wrought Aluminum	Warehouse
6061-T651 Aluminum	Warehouse
Oil Impregnated Bronze	Warehouse
90 Manganese Bronze #423	Warehouse
404 DC Yellow Brass	Warehouse
400 Tool Steel	Production Area

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2-28-90

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION	
B. Oils and Lubricants		
Unocal Unax AW 68 (Hydraulic)	Oil Storage	
Unocal Unax AW 46 (Hydraulic)	Oil Storage	
Unocal Turbine Oil 68	Oil Storage	
Unocal Unoba EP Grease 2	Oil Storage	
10-89 ~~Unocal Marok 68 Oil~~	~~Oil Storage~~	Delete per Ray Finne
Cimperial 1011 Coolant	Oil Storage	
Cimclean 30 Coolant cleaner	Oil Storage	
Soluble Organic Compound #135- die lube	Oil Storage	
Unocal Soluble Oil 10 coolant	Oil Storage	
Unocal Heavy Duty Motor Oil 30	Oil Storage	
Chevron Insulating Oil	Oil Storage	
10/89 ~~Lubrizol 6525~~	~~Oil Storage~~	Delete per Ray Finn
10/89 ~~Unocal Hydraulic Oil AW 68~~	~~Oil Storage~~	" " "
Unocal Koolkut II HD	Oil Storage	
Unocal Marok 220	Oil Storage	
10/89 ~~Anderal 500 Oil~~	~~Oil Storage~~	Delete per Ray Finn
29 Moly Cart	Oil Storage	
81 BP-2 (formerly 81 EP LIght)	Oil Storage	
Union Turbine Oil 100, 150	Oil Storage	
REGAL TURBINE OILS	Oil Storage	
SYN-STAR Air Compressor Oils(Synthe)	Oil Storage	
UNOCAL GUARDOL MOTOR OIL 10W (Air Comp)	Oil Storage	
DELTAFORGE 1105 (Die Lubricant)	Oil Storage	

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
C. Solvents and Thinners	
Chevron Thinner 350 B	**Oil Storage**
Rodda Thinner: Synthetic Reducer	**Warehouse==**
853 Degreaser	**Oil Storage**
Safety Kleen 105 Solvent-MS	Oil Storage

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V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
D. Welding and Soldering Supplies	
Oxygen	Welding Area
Liquid Air Fuel Gas	Welding Area
Blue Shield Nos.6,7 or 8 gas mixture	Welding Area
Blue Shield Nos. 4 or 5 gas mixture	Welding Area
Welco 1620 Auto Spatter Compound	Welding Area
Fleetweld 35 Welding rod	Welding Area
UTP 653 Stainless welding rod	Welding Area
UTP 65 312 Stainless Welding rod	Welding Area
Jet-LH78 Welding Rod (E7018)	Welding Area
Stainless Steel Welding Electrodes	Welding Area
Stainless Steel Welding Wire	Welding Area
WeldMold Stick Electrode	Welding Area
Silvaloy 45 Silver Solder	Welding Area
Ultra Flux	Welding Area
Braze Welding Wire & Rod	Welding Area
E7024 Welding Rod	Welding Area
E6013 Welding Rod	Welding Area
Tool Steel Flux-Cored Wire	Welding Area
Dual Shield T-1 and T-2 Flux-Cored Welding Rods	Welding Area
Mild and Low Alloy Steel Welding Wire	Welding Area
Fuel-Gas-Propylene	Welding Area
Aluminum Welding Rod	Welding Area
Solders (Harris Product)	Welding Area
SLICE Cutting Rod	Welding Area
Brazing Fluxes	Welding Area
NI-ROD Welding Electrodes & Cored Wire	Welding Area
Solid Steel Welding Wire (Bellair)	Welding Area
Carbon Dioxide	Welding Area
Argoshield Gas #1, #1 #5	Welding Area
Argoshield Gas #8C, #25C	Welding Area

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V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
E. Paints	
Sparvar Spray Paint - Metallic Item Nos. S-121,S-122,S-123	Supply Closet
Sparvar Fluorescent Spray Paint Item Nos. S-311,S-312	Supply Closet
Sparvar Spray Paint - Flat Item No. S-111	Supply Closet
Sparvar Spray Paint Item Nos. S-101,S-103,S-117,S-118	Supply Closet
Sparvar Spray Paint Covers 25 Items	Supply Closet
Rodda Alkyd Enamel 817	Warehouse
Rodda Alkyd Enamel 812Spray Paint	Supply Closet
Rodda Alkyd Primer Red Oxide	Supply Closet
Rodda Alkyd Enamel 816	Supply Closet
ZINC RE-NU (Aerosol) #3074	Supply Closet
Rodda Alkyd Enamel #802 Yellow	Supply Closet
Valve Action Paint Marker - All Colors	Supply Closet

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V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
F. Furnace Construction Materials	
Marinite M Calcium Silicate Board	**Warehouse**
Lytherm Ceremic Fiber Papers	**Warehouse**
Mizzou Castable Plus	**Warehouse**
A.P. Green: Refractory Bricks or Slopes	**Warehouse**
A.P. Green: Insulating Fire Brick: G 3	**Warehouse**
A.P. Green: High Duty Fireclay Brick: Idaho	**Warehouse**
Cerachrome Blanket Refractory	**Warehouse**
K-FAC 19 Board	**Warehouse**
Sairset Mortar	**Warehouse**
Durablanket 2600	**Warehouse**
A.P. GREEN: Insulating Firebrick Greenlite-28	Warehouse
A.P. Green: Kast-O-Lite 30 Plus Castable	Warehouse
Purotab (all)	Warehouse
Cerablanket	Warehouse
Cerachem Blanket	Warehouse
Purocast; Purocast GM; Purocast N	Warehouse
Purocrete; Purocrete GM	Warehouse
TROWLEZE	Warehouse

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V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
G. Miscellaneous	
Quick Set Adhesive 404	**Maint. Area**
Never-seez Anti-Seize Compound	**Maint. Area**
Floor Dry	**Warehouse**
Loctite Adhesive/Sealant 271	**Maint. Area**
Crack Check Cleaner C-F (Spray)	**Supply Closet**
Crack Check Developer D-NF (Spray)	**Supply Closet**
Crack Check Penetrant P-HF (Spray	**Supply Closet**
Thread Sealant w/Teflon 14H,14D,14F	**Maint. Area**
Propane	**Center Yard**
Fel-Pro N-500 Antiseize	**Maint. Area**
Devon Plastic Steel Putty	**Maint. Area**
50 Hardhat Aeorsol Spray	**Supply Closet**
Safety-Kleen Gen. Purpose Cleaner 666	Supply Closet
Lotion Hand Cleaner w/Grit 604	Supply Closet
Waterless Hand Cleaner 602 w/Corn Huskers	Supply Closet
Dykem Layout Fluids Lotion	Supply Closet
#6 Tapmatic Corp. Edge Creme	Supply Closet
#5 Tapmatic Corp. Edge Creme	" "
#12 Prussian Blue Fitting Compound #80038	" "
#24 Anti-Seize Lubricant (permatex)	" "
#17 Coated Norzon R824	" "
#2 Resin Bonded Grinding Wheels	" "
Ferrous Cutting Tools/Cemented Crabide	" "
Carbide Grades (small tools)	" "
All Bonded Abrasives (67 Norton)	" "

VI. HAZARDOUS NONROUTINE TASKS

Periodically, employees are required to perform hazardous nonroutine tasks. Prior to starting work on such projects, each affected employee will be given information by the Production Manager about hazardous chemicals to which they may be exposed during such activity.

This information will include:

- Specific chemical hazards
- Protective/safety measures the employee can take
- Measures the company has taken to lessen the hazards including ventilation, respirators, presence of another employee and emergency procedures

Examples of nonroutine tasks performed by employees of this company:

Task	Hazardous Chemical
Furnace Rebuilding	Misc. Refractory Materials

VII. INFORMING CONTRACTORS

It is the responsibility of the Production Manager to provide contractors (with employees) the following information:

- Hazardous chemicals to which they may be exposed while on the job site
- Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures

VIII. APPENDIX: OAR 437 Division 155 Hazard Communication

OAR 437

DIVISION 155

HAZARD COMMUNICATION

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DIVISION 155

HAZARD COMMUNICATION

[Ed. Note: OAR 437, Division 155, Hazard Communication was first adopted by WCD Admin. Order, Safety 6-1984, filed 6/25/84, effective 11/25/85. Chemical manufacturers, importers, and distributors are required to be in compliance with this code by 11/25/85. All employers covered by this code are required to be in compliance by 5/25/86.

OAR 437, Division 113 (formerly Chapter 22-015), Warning Signs, Tags and Labels, will be in effect until 11/25/85 for all employers covered by this code, Division 155, Hazard Communication.]

Authority of Rules

437-155-001 These rules are promulgated under the director's authority contained in ORS 654.025(2) and ORS 656.726(3).

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Scope and Application

437-155-004 (1) This division requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers except those in agriculture and construction, (Division A, Agriculture, Major Groups 01, 02, and 07 and Division C, Construction, Standard Industrial Classification Manual) to provide information to their employes about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this division requires distributors to transmit the required information to employers.

(2) This division applies to any chemical which is known to be present in the workplace in such a manner that employes may be exposed under normal conditions of use or in a foreseeable emergency.

(3) This division applies to laboratories only as follows:

(a) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(b) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employes; and,

(c) Employers shall ensure that laboratory employes are apprised of the hazards of the chemicals in their workplaces in accordance with OAR 437-155-030 of this division.

(4) This division does not require labeling of the following chemicals:

(a) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(b) Any food, food additive, color additive, drug, or cosmetic, including materials intended for use as ingredients in such products (e.g., flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) and regulations issued under that Act, when they are subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Food and Drug Administration;

(c) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol Tobacco, and Firearms; and,

(d) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission.

(5) This division does not apply to:

(a) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(b) Tobacco or tobacco products;

(c) Wood or wood products;

(d) Articles; and,

(e) Foods, drugs, or cosmetics intended for personal consumption by employes while in the workplace.

(f) Any transportation of hazardous substance as defined in 49 CFR 171.8 and subject to the regulations issued by the Department of Transportation (49 CFR 171-177) under the Hazardous Materials Transportation Act (49 U.S.C. 1801 et. seq.).

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Definitions

437-155-005 (1) Article: A manufactured item:

(a) Which is formed to a specific shape or design during manufacture;

(b) Which has end use function(s) dependent in whole or in part upon its shape or design during end use; and

(c) Which does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use.

(2) Administrator: The administrator of the Accident Prevention Division, or appointed representative.

(3) Chemical: Any element, chemical compound or mixture of elements and/or compounds.

(4) Chemical manufacturer: An employer in SIC Codes 20 through 39 with a workplace where chemical(s) are produced for use or distribution.

(5) Chemical name: The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

(6) Combustible liquid: Any liquid having a flashpoint at or above 100° F (37.8° C), but below 200° F (93.3° C), except any mixture having components with flashpoints of 200° F (93.3° C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

(7) Common name: Any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

(8) Compressed gas:

(a) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70° F (21.1° C); or

(b) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130° F (54.4° C) regardless of the pressure at 70° F (21.1° C); or

(c) A liquid having a vapor pressure exceeding 40 psi at 100° F (37.8° C) as determined by ASTM D-323-72, Test Method of Vapor Pressure of Petroleum Products (Reid Method).

(9) Container: Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this division, pipes or piping systems are not considered to be containers.

(10) Designated representative: Any individual or organization to whom an employe gives written authorization to exercise such employe's rights under this division. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employe authorization.

(11) Distributor: A business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to purchasers.

(12) Employe: A worker employed by an employer (as defined in OAR 437-155-004(1)) who may be exposed to hazardous chemicals under normal operating conditions or foreseeable emergencies.

(13) Employer: Any person as defined by OAR 436, Division 46, Rules for the Administration of OSEAct, OAR 436-46-015(23), and where chemicals are either used, or are produced for use or distribution. Employers engaged in the agriculture and construction industries are exempted.

(14) Explosive: A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

(15) Exposure or exposed: An employe is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g. accidental or possible) exposure.

(16) Flammable: A chemical that falls into one of the following categories:

(a) Aerosol, flammable: An aerosol that, when tested by the method described in Consumer Products Safety Commission regulation, 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(b) Gas, flammable:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(c) Liquid, flammable: Any liquid having a flashpoint below 100° F (37.8° C), except any mixture having components with flashpoints of 100° F (37.8° C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(d) Solid, flammable: A solid, other than a blasting agent or explosive as defined in Division 45, Handling and Use of Explosives and Blasting Agents, OAR 437-45-005, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable

solid if, when tested by the method described in Consummer Products Safety Commission regulation, 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

(17) Flashpoint: The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(a) Tagliabue Closed Tester (See American National Standard, Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79))-for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100° F (37.8° C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(b) Pensky-Martens Closed Tester (see American National Standard, Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79))-for liquids with a viscosity equal to or greater than 45 SUS at 100° F (37.8° C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(c) Setaflash Closed Tester (see American National Standard, Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

(18) Foreseeable emergency: Any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

(19) Hazardous chemical: Any chemical which is a physical hazard or a health hazard.

(20) Hazard warning: Any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical(s) in the container(s).

(21) Health hazard: A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employes. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this division, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this code.

(22) Identity: Any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

(23) Immediate use: The hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

(24) Importer: The first business with employes within Oregon which receives hazardous chemicals produced in other states or countries for the purpose of supplying them to distributors or purchasers within Oregon.

(25) Label: Any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

(26) Material safety data sheet (MSDS): Written or printed material concerning a hazardous chemical which is prepared in accordance with OAR 437-155-025.

(27) Mixture: Any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

(28) Organic peroxide: An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

(29) Oxidizer: A chemical other than a blasting agent or explosive as defined in Division 45, Handling and Use of Explosives and Blasting Agents, OAR 437-45-005, that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

(30) Physical hazard: A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

(31) Produce: To manufacture, process, formulate, or repackage.

(32) Purchaser: An employer with a workplace as specified in OAR 437-155-004(1) who purchases a hazardous chemical for use within that workplace.

(33) Pyrophoric: A chemical that will ignite spontaneously in air at a temperature of 130° F (54.4° C) or below.

(34) Responsible party: Someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(35) Specific chemical identity: The chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

(36) Trade secret: Any confidential formula, pattern, process, device, information or compilation of information (including chemical name or other unique chemical identifier) that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

(37) Unstable (reactive): A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

(38) Use: To package, handle, react, or transfer.

(39) Water-reactive: A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

(40) Work area: A room or defined space in a workplace where hazardous chemicals are produced or used, and where employes are present.

(41) Workplace: An establishment at one geographical location containing one or more work areas.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Purpose

437-155-007 The purpose of this division is to ensure that the hazards of all chemicals produced or imported by chemical manufacturers or importers are evaluated, and that information concerning their hazards is transmitted to affected employers and employes. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employe training.

This occupational safety and health code is intended to address comprehensively the issue of evaluating and communicating chemical hazards to affected employes.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Hazard Determination

437-155-010 (1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this division. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(a) Toxic and hazardous substances described in the following divisions: Division 114, Contaminants; Division 115, Asbestos; Division 116, Carcinogens; Division 131, Vinyl Chloride; Division 134, Inorganic Arsenic; Division 111, Lead; Division 146, Cotton Dust; Division 132, DBCP (1, 2-dibromo-3-chloropropane); Division 135, Acrylonitrile; and Division 133, Thiram.

(b) Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition).

The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this code.

(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(a) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

(b) International Agency for Research on Cancer (IARC) Monographs (latest editions); or

(c) Toxic and hazardous substances described in the following divisions: Division 114, Contaminants; Division 115 Asbestos; Division 116, Carcinogens; Division 131, Vinyl Chloride; Division 134, Inorganic Arsenic; Division 111, Lead; Division 146, Cotton Dust; Division 132, DBCP (1, 2-dibromo-3-chloropropane); Division 135, Acrylonitrile; and Division 133, Thiram.

Note: The Registry of Toxic Effects of Chemical Substances published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(a) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

(b) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under section (4) of this rule;

(c) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use

whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,

(d) If the employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established APD permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employes in those concentrations, the mixture shall be assumed to present the same hazard.

(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employes, their designated representatives, and the administrator. The written description may be incorporated into the written hazard communication program required under OAR 437-155-015 of this division.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Written Hazard Communication Program

437-155-015 (1) Employers shall develop and implement a written hazard communication program for their workplaces which at least describes how the criteria specified in OAR 437-155-020 through 030 of this division for labels and other forms of warning, material safety data sheets, and employe information and training will be met, and which also includes the following:

(a) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas);

(b) The methods the employer will use to inform employes of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas; and,

(c) The methods the employer will use to inform any contractor employers with employes working in the employer's workplace of the hazardous chemicals their employes may be exposed to while performing their work, and any suggestions for appropriate protective measures.

(2) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this rule, OAR 437-155-015.

(3) The employer shall make the written hazard communication program available, upon request, to employes, their designated representatives, and administrator, in accordance with the requirements of Division 200, Employe Access to Exposure and Medical Records.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Labels and Other Forms of Warning

437-155-020 (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(a) Identity of the hazardous chemical(s);

(b) Appropriate hazard warnings; and

(c) Name and address of the chemical manufacturer, importer, or other responsible party.

(2) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this division in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the U.S. Department of Transportation.

(3) If the hazardous chemical is regulated by APD in a substance-specific health code, the chemical manufacturer, importer, distributor or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that code.

(4) Except as provided in OAR 437-155-020(5) and (6) the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

(a) Identity of the hazardous chemical(s) contained therein; and

(b) Appropriate hazard warnings.

(5) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by OAR 437-155-020(4) of this division to be on a label. The written materials shall be readily accessible to the employes in their work area throughout each work shift.

(6) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employe who performs the transfer.

(7) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(8) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employes who speak other languages may add the information in their languages to the material presented, as long as the information is presented in English as well.

(9) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this division if existing labels already convey the required information.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Material Safety Data Sheets

437-155-025 (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical which they use.

(2) Each material safety data sheet shall be in English and shall contain at least the following information:

(a) The identity used on the label, and, except as provided for in OAR 437-155-035, Trade Secrets:

(A) If the hazardous chemical is a single substance, its chemical and common name(s);

(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(C) If the hazardous chemical is a mixture which has not been tested as a whole:

(i) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under OAR 437-155-010(4) of this division shall be listed if the concentrations are 0.1% or greater; and,

(ii) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(b) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

(c) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

(d) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

(e) The primary route(s) of entry;

(f) The APD permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

(g) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by APD;

(h) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

(i) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

(j) Emergency and first aid procedures;

(k) The date of preparation of the material safety data sheet or the last change to it; and,

(l) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) Chemical manufacturers or importers shall ensure that distributors and purchasers of hazardous chemicals are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated. The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the purchaser prior to or at the time of the shipment. If the material safety data sheet is not provided with the shipment, the purchaser shall obtain one from the chemical manufacturer, importer, or distributor as soon as possible.

(7) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and purchasers of hazardous chemicals.

(8) The employer shall maintain copies of the required material safety data sheets for each hazardous chemical in the workplace, and shall ensure that they are readily accessible during each work shift to employes when they are in their work area(s).

(9) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employes when they are in in their work area(s).

(10) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the administrator, in accordance with the requirements of Division 200, Employe Access to Exposure and Medical Records.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Employe Information and Training

437-155-030 Employers shall provide employes with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

(1) Information. Employes shall be informed of:

(a) The requirements of this division;

(b) Any operations in their work area where hazardous chemicals are present; and,

(c) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this division.

(2) Training. Employe training shall include at least:

(a) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(b) The physical and health hazards of the chemicals in the work area;

(c) The measures employes can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employes from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(d) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employes can obtain and use the appropriate hazard information.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Trade Secrets

437-155-035 (1) The chemical manufacturer, importer or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(a) The claim that the information withheld is a trade secret can be supported;

(b) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(c) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(d) The specific chemical identity is made available to health professionals, in accordance with the applicable provisions of this rule.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of OAR 437-155-035(3) and (4) of this division, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under OAR 437-155-035(1) of this division, to a health professional (i.e. physician, registered nurse, industrial hygienist, toxicologist, or epidemiologist) providing medical or other occupational health services to exposed employe(s) if:

(a) The request is in writing;

(b) The request describes with reasonable detail one or more of the following occcupational health needs for the information:

(A) To assess the hazards of the chemicals to which employes will be exposed;

(B) To conduct or assess sampling of the workplace atmosphere to determine employe exposure levels;

(C) To conduct pre-assignment or periodic medical surveillance of exposed employes;

(D) To provide medical treatment to exposed employes;

(E) To select or assess appropriate personal protective equipment for exposed employes;

(F) To design or assess engineering controls or other protective measures for exposed employes; and,

(G) To conduct studies to determine the health effects of exposure.

(c) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information would not enable the health professional to provide the occupational health services described in OAR 437-155-035(3)(b) of this division:

(A) The properties and effects of the chemical;

(B) Measures for controlling workers' exposure to the chemical;

(C) Methods of monitoring and analyzing worker exposure to the chemical; and,

(D) Methods of diagnosing and treating harmful exposures to the chemical;

(d) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(e) The health professional, and the employer or contractor of the health professional's services (i.e., downstream employer, labor organization, or individual employer), agree in a written confidentiality agreement that the health professional will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to APD, as provided in OAR 437-155-035(6) of this division, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentiality agreement authorized by OAR 437-155-035-(3)(d) of this division:

(a) May restrict the use of the information to the health purposes indicated in the written statement of need;

(b) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(c) May not include requirements for the posting of a penalty bond.

(5) Nothing in this code is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional receiving the trade secret information decides that there is a need to disclose it to APD, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional prior to, or at the same time as, such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(a) Be provided to the health professional within thirty days of the request;

(b) Be in writing;

(c) Include evidence to support the claim that the specific chemical identity is a trade secret;

(d) State the specific reasons why the request is being denied; and,

(e) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional whose request for information is denied under OAR 437-155-035(3) of this division may refer the request and the written denial of the request to APD for consideration.

(9) When a health professional refers the denial to APD under OAR 437-155-035(8) of this division, APD shall consider the evidence to determine if:

(a) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(b) The health professional has supported the claim that there is a medical or occupational health need for the information; and,

(c) The health professional has demonstrated adequate means to protect the confidentiality.

(10) (a) If APD determines that the specific chemical identity requested under OAR 437-155-035(3) of this division is not a bona fide trade secret, or that it is a trade secret but the requesting health professional has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by APD.

(b) If a chemical manufacturer, importer, or employer demonstrates to APD that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the administrator may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(11) If following the issuance of a citation, subpoena, or any protective orders, the chemical manufacturer, importer, or employer continues to withhold specific chemical identity information required by the rules of this division, then the Accident Prevention Division (APD) may take the following actions:

(a) APD may issue additional citations and penalties pursuant to ORS 654.071(4), ORS 654.086(1)(d), or ORS 654.086(3), or

(b) APD may refer the matter to the circuit court in the county in which the proceedings are pending for enforcement of the subpoena.

(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the administrator any information which this division requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the administrator so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(13) Nothing in this rule shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

Effective Dates

437-155-040 Employers shall be in compliance with this division within the following time periods:

(1) Chemical manufacturers and importers shall label containers of hazardous chemicals leaving their workplaces, and provide material safety data sheets with initial shipments by November 25, 1985.

(2) Distributors shall be in compliance with all provisions of this division applicable to them by November 25, 1985.

(3) Employers shall be in compliance with all provisions of this division by May 25, 1986, including initial training for all current employes.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

APPENDIX A

HEALTH HAZARD DEFINITIONS (Mandatory)

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body--such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employes -- such as shortness of breath, a non-measurable, subjective feeling. Employes exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1982) -- irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employes to be informed of such effects and protected from them.

Appendix B, which is also mandatory, outlines the principles and procedures of hazard assessment.

For purposes of this division, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards:

1. Carcinogen: A chemical is considered to be a carcinogen if:

(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or

(b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,

(c) It is regulated by APD as a carcinogen.

2. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

3. Highly toxic: A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. Irritant: A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of Consumer Products Safety Commission regulation, 16 CFR 1500.41, for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

5. Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

6. Toxic. A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC 50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. Target organ effects.

The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

a.	Hepatotoxins:	Chemicals which produce liver damage
	Signs & Symptoms:	Jaundice; liver enlargement
	Chemicals:	Carbon tetrachloride; nitrosamines
b.	Nephrotoxins:	Chemicals which produce kidney damage
	Signs & Symptoms:	Edema; proteinuria
	Chemicals:	Halogenated hydrocarbons; uranium
c.	Neurotoxins:	Chemicals which produce their primary toxic effects on the nervous system
	Signs & Symptoms	Narcosis; behavioral changes; decrease in motor functions
	Chemicals:	Mercury; carbon disulfide

d.	Agents which act on the blood or hemato-poietic system:	Decrease hemoglobin function; deprive the body tissues of oxygen
	Signs & Symptoms:	Cyanosis; loss of consciousness
	Chemicals:	Carbon monoxide; cyanides
e.	Agents which damage the lung:	Chemicals which irritate or damage the pulmonary tissue
	Signs & Symptoms:	Cough; tightness in chest; shortness of breath
	Chemicals:	Silica; asbestos
f.	Reproductive toxins:	Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)
	Signs & Symptoms:	Birth defects; sterility
	Chemicals:	Lead; DBCP
g.	Cutaneous hazards:	Chemicals which affect the dermal layer of the body
	Signs & Symptoms:	Defatting of the skin; rashes; irritation
	Chemicals:	Ketones; chlorinated compounds
h.	Eye hazards:	Chemicals which affect the eye or visual capacity
	Signs & Symptoms:	Conjunctivitis; corneal damage
	Chemicals:	Organic solvents; acids

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

APPENDIX B

HAZARD DETERMINATION (Mandatory)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. Carcinogenicity: As described in OAR 437-155-010(4) and Appendix A of this division, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this division.

2. Human data: Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

3. Animal data: Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

4. Adequacy and reporting of data. The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet. The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.

APPENDIX C

INFORMATION SOURCES (Advisory)

The following is a list of available data sources which the chemical manufacturer, importer, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:

-- Any information in their own company files such as toxicity testing results or illness experience of company employes.

-- Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.

-- Any pertinent information obtained from the following source list (latest editions should be used):

Condensed Chemical Dictionary
Van Nostrand Reinhold Co.
135 West 50th Street
New York, NY 10020

The Merck Index: An Encyclopedia of Chemicals and Drugs
Merck and Company, Inc.
126 E. Lincoln Avenue
Rahway, NJ 07065

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man
Geneva: World Health Organization
International Agency for Research on Cancer, 1972-1977
(Multivolume work)
49 Sheridan Street
Albany, New York

Industrial Hygiene and Toxicology, by F.A. Patty
John Wiley & Sons, Inc.
New York, NY
(Five volumes)

Clinical Toxicology of Commercial Products
Gleason, Gosselin and Hodge

Casarett and Doull's
Toxicology; The Basic Science of Poisons,
Doull, Klaassen, and Amdur
Macmillan Publishing Co., Inc.
New York, NY

Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy
Publishing Sciences Group, Inc.
Acton, MA

Toxicology of the Eye, by W. Morton Grant
Charles C. Thomas
301-327 East Lawrence Avenue
Springfield, IL

Recognition of Health Hazards in Industry
William A. Burgess
John Wiley and Sons
605 Third Avenue
New York, Ny 10158

Chemical Hazards of the Workplace
Nick H. Proctor and James P. Hughes
J.P. Lipincott Company
6 Winchester Terrace
New York, NY 10022

Handbook of Chemistry and Physics
Chemical Rubber Company
18901 Cranwood Parkway
Cleveland, OH 44128

Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes
American Conference of Governmental Industrial Hygienists
6500 Glenway Avenue, Bldg. D-5
Cincinnati, OH 45211

NOTE: the following documents are on sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

Occupational Health Guidelines
NIOSH/OSHA (NIOSH Pub. No. 81-123)

NIOSH/OSHA Pocket Guide to Chemical Hazards
NIOSH Pub. No. 78-210

Registry of Toxic Effects of Chemical Substances
U.S. Department of Health and Human Services
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
(NIOSH Pub. No. 80-102)

The Industrial Environment - Its Evaluation and Control
U.S. Department of Health and Human Services
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
(NIOSH Pub. No. 74-117)

Miscellaneous Documents - National Institute for Occupational Safety and Health

1. Criteria for a recommended standard . . . Occupational Exposure to " _____ "
2. Special Hazard Reviews
3. Occupational Hazard Assessment
4. Current Intelligence Bulletins

BIBLIOGRAPHIC DATA BASES

Service Provider	File Name
Bibliographic Retrieval Services (BRS) Corporation Park, Bldg. 702 Scotia, New York 12302	AGRICOLA BIOSIS PREVIEWS CA CONDENSATES CA SEARCH DRUG INFORMATION MEDLARS MEDOC NTIS POLLUTION ABSTRACTS SCIENCE CITATION INDEX SSIE
Lockheed - DIALOG Lockheed Missiles & Space Company, Inc. P.O. Box 44481 San Francisco, CA 94144	AGRICOLA BIOSIS PREV. 1972-PRESENT BIOSIS PREV. 1969-71 CA CONDENSATES 1970-71 CA SEARCH 1972-76 CA SEARCH 1977-PRESENT CHEMNAME CONFERENCE PAPERS INDEX FOOD SCIENCE & TECH. ABSTR. FOODS ADLIBRA INTL. PHARMACEUTICAL ABSTR. NTIS POLLUTION ABSTRACTS SCISEARCH 1978-PRESENT SCISEARCH 1974-77 SSIE CURRENT RESEARCH
SDC - ORBIT SDC Search Service Department No. 2230 Pasadena, CA 91051	AGRICOLA BIOCODES BIOSIS/BIO6973 CAS6771/CAS7276 CAS77 CHEMDEX CONFERENCE ENVIROLINE LABORDOC NTIS POLLUTION SSIE

Chemical Information System (CIS)
Chemical Information Systems, Inc.
7215 Yorke Road
Baltimore, MD 21212

Structure & Nomenclature Search System
Acute Toxicity (RTECS)
Clinical Toxicology of Commercial Products
Oil and Hazardous Materials Technical Assistance Data System

National Library of Medicine
Department of Health and Human Services
Public Health Service
National Institutes of Health
Bethesda, MD 20209

Toxicology Data Bank (TDB)
MEDLINE
TOXLINE
CANCERLIT
RTECS

Hist: WCD Admin. Order, Safety 6-1984, f. 6/25/84, ef. 11/25/85.